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Title: About the Complex Natural and Engineered Systems Pillar

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About the Complex Natural and Engineered Systems Pillar

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Los Alamos National Laboratory is a world leader in applying multi-disciplinary science to complex systems within the Complex Natural and Engineered Systems (CNES) challenge areas. Our search for solutions requires science and technology innovation, as well as an integrated experiment, theory, and modeling and simulation approach.

Our research and development spans from improving engineered systems such as nuclear weapons and the power grid, to understanding the interface of human and engineered systems from the subsurface to space, to studying how complex natural systems such as disease and climate impact humanity.

Challenges

Nuclear Threats: Explain the complex interactions and resulting impacts between natural environments and human actions from nuclear threats.

- ***10-year goal****: Understand and predict the effects of nuclear events on natural environments (Earth's core to space).*

Engineered Systems: Design, build, protect, predict and control engineered systems.

- ***10-year goal:*** *Develop sufficient predictive ability to enable improved resilience in design of engineered systems or, where applicable, to develop the means to maintain positive control even outside of design lifetime or specification.*

Non-Nuclear Threats: Explain the complex interactions and resulting impacts between natural environments and human actions involving non-nuclear threats.

- ***10-year goal****: Establish science-based models and systems of human–environment interactions representing natural threats and anthropogenic non-nuclear threats that inform national policy and decision makers.*